



$$\dot{x}_1 = -f_{MM}^{(K_1, a_1)}(x_6, x_1) - b_1 x_1 + b_1 u_1$$

$$\dot{x}_2 = f_{MM}^{(K_7, a_7)}(x_1, x_2) - b_2 x_2 - a_7 \frac{x_2}{K_7 + x_2} u_1 + b_2 u_2$$

$$f_{MM}^{(K_i, a_i)}(x_i, x_j) := a_i x_i \frac{x_j}{K_i + x_j}$$

$$\dot{x}_3 = f_{MM}^{(K_4, a_4)}(x_2, x_4) - f_{MM}^{(K_5, a_5)}(\overline{x_8}, x_3) - f_{MM}^{(K_2, a_2)}(x_1, x_3) + f_{MM}^{(K_5, a_5)}(\overline{x_8}, x_5) - f_{MM}^{(K_6, a_6)}(\overline{x_9}, x_3)$$

$$\dot{x}_4 = -f_{MM}^{(K_4, a_4)}(x_2, x_4) + f_{MM}^{(K_3, a_3)}(\overline{x_8}, x_6) - f_{MM}^{(K_2, a_2)}(x_1, x_4) + f_{MM}^{(K_5, a_5)}(\overline{x_8}, x_3) + f_{MM}^{(K_6, a_6)}(\overline{x_9}, x_3)$$

$$\dot{x}_5 = f_{MM}^{(K_4, a_4)}(x_2, x_6) + f_{MM}^{(K_2, a_2)}(x_1, x_3) - f_{MM}^{(K_5, a_5)}(\overline{x_8}, x_5) - f_{MM}^{(K_5, a_5)}(\overline{x_8}, x_5) - f_{MM}^{(K_6, a_6)}(\overline{x_9}, x_5)$$

$$\dot{x}_6 = f_{MM}^{(K_2, a_2)}(x_1, x_4) - f_{MM}^{(K_3, a_3)}(\overline{x_8}, x_6) - f_{MM}^{(K_4, a_4)}(x_2, x_6) + f_{MM}^{(K_5, a_5)}(\overline{x_8}, x_5) + f_{MM}^{(K_6, a_6)}(\overline{x_9}, x_5)$$